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SMOKED HERRING

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INTRODUCTION

The sea herring (Clupea harengus) was probably the first fish to be smoked on a commercial scale. Hard-smoked herring was one of the few food products in the Middle Ages which could be preserved for more than a short time with any degree of success, and in an age when commerce was generally local, found a market in many parts of Europe. As far back as the time of Edward I, Yarmouth was already noted for its smoked herring; and English merchants were exporting smoked herring to the continent.

Herring is today the most important smoked fishery product in the world, and is almost the only one not regarded as a luxury article. The most important herring smoking centers are in England, Scotland, Holland, France, and Norway in Europe; the provinces of Nova Scotia and New Brunswick in Canada; and the state of Maine in the United States. More herring is smoked in Scotland than in any other country.

The four important methods of smoking herring result in widely different products. Herring that have been heavily salted and given a long, cold smoke until they are hard and dry are called "hard-smoked" or "red" herring. Round herring that have been lightly salted and dried in a short cold smoke are known as "bloaters" and will keep for only a short period. In the United States, only the large, lightly smoked herring are classed as bloaters; but in Europe, fish of almost any size may be given this cure. "Kippered" herring are fish that have been split and gutted, lightly flavored with salt, and given a short, cold smoke. "Buckling" or "pickling" are large, fat, round herring, lightly salted that have been given a short, cold smoke followed by a hot smoke which also cooks the fish.

Note: This leaflet supersedes FL-44, "How to Make Bloaters"; S-17, "Smoked and Pickled Herring"; and S-84, "Kippered Herring".

Scottish immigrants of the late eighteenth century are said to have been responsible for the introduction of red herring to this continent. Red or hard-smoked herring has lost a good deal of its popularity, but it is still cured in considerable quantity and is the source of "boneless smoked herring", the smoked fish being skinned and boned for this product. Although hard-smoked herring has better keeping qualities, a lighter-smoked product is now favored. The curing of bloaters in America is reported to have begun in 1859 at Boston, Massachusetts, where it was introduced from Scotland. The preparation of kippered herring is believed to have first occurred on this continent in Canada about 1890. According to some reports buckling was first cured in America by early settlers from the Netherlands. Other sources say that this product was introduced by German immigrants about the middle of the nineteenth century.

HARD-SMOKED HERRING

The herring were formerly scaled before they were unloaded from the boat. This was done by having the fishermen shuffle through the pile of fish without lifting their feet, thus stirring the heap around. This step has been almost entirely discontinued since the close of the nineteenth century, as it was found to result in a large number of bruised and belly-broken fish. Also, the amount of handling necessary in smoking removes nearly all the scales without any special effort.

Either fresh or salt herring may be used in smoking hard or red herring. Fresh herring are preferred since a higher quality product is obtained. In Maine the herring are obtained principally from weirs in the Passamaquoddy Bay region. Some herring are also imported from various points in New Brunswick. Many of the weirs are owned by groups of farmers with waterfront property. They cooperate in the construction and operation of the weir. The catch is divided among the owners, who may sell to the operators of large smokehouses near Eastport or Lubec, or may cure their shares individually, as they prefer.

The first step in curing hard herring is brining or "pickling", if the fish is fresh. This may be done by mixing the herring with dry salt, the method favored in Europe. In America the fish are given a light salting in brine. Fresh herring intended for smoking are taken to the salting shed of the smoke house as soon as they are landed and are placed in tanks with a capacity of about four hogsheads of herring each. A hogshead will hold 1200 pounds of fish. After the tank has been partly filled with 40° salinometer brine, enough herring are put into the tank to form a layer on the bottom. Approximately 30 pounds of salt is thrown on this layer of fish. Another layer of fish, about two barrels in amount, then goes into the tank, to be covered with a somewhat heavier layer of salt, from 60 to 90 pounds in amount. A third or top layer of fish is added and covered with a still heavier layer of salt, amounting to from 180 to 300 pounds. The top layers are more heavily salted in order to prevent the herring from being unequally cured. This would occur if the salt were equally distributed, since the brine at the top would then become weak. The amount of salt used depends on the condition of the fish and the season of the year. If the herring are large or fat, or if the weather is warm, more salt is required. In cool weather and if the fish have just been caught, less salt than usual is needed. The time required to brine the herring is also dependent on the factors just mentioned. Small herring are brined from 24 to 36 hours. Large herring are salted up to 48 hours, or even longer if they are very fat.

When the herring have been sufficiently salted they are removed from the brining tanks by dip nets, locally called "wash nets". The net full of fish is rinsed around in the brine of the tank to clean the herring and is then emptied on the "stringing" tables. The brine drains off while the fish are being "hung".

If salt herring are to be smoked, the first step is to soak them in sea water to remove the excess salt. The herring are soaked or "freshened" from 12 to 15 hours. Some smokers change the water at least once while the fish are being freshened; others do not.

The smoke sticks on which the herring are hung are thin, wooden rods about 3/4 inch diameter, 3½ feet long, and pointed at one end. In stringing the herring, the back of the fish is held in the right hand. The left gill cover is raised by the right thumb, and the pointed end of the stick is inserted through the gill cover and out at the mouth. The fish are shoved along the stick as they are hung until it holds from 25 to 35 herring. A workman will string from 500 to 1000 sticks in a day.

When a stick is filled with herring it is rinsed in a tub of clean sea water and hung on a "herring horse". This is a rectangular frame, resembling a rather crude stretcher with fixed legs. It is used to transport the sticks of herring to the smokehouse and as a rack for draining and drying. A horse will hold 45 sticks, or about one barrel of herring. Each frame is carried out into the open air, weather permitting, and allowed to stand until the water has drained off and the fish are dry enough to hang in the smokehouse. The weather determines the length of the drying period, which varies from one to five hours. This preliminary drying hardens the gill covers so that the fish are not so apt to fall from the sticks during smoking. The fish also smoke more evenly and have a better appearance. If the weather is unfavorable; that is, foggy or rainy, the herring are hung in the smokehouse after draining for a few minutes. The smokehouse vents and doors are opened, and the fish are dried over a clear fire.

Each smokehouse is divided by scantlings into a number of sections called "bays". These divisions are just far enough apart so that the ends of the smoke sticks will rest on the crosspieces or stringers fastened horizontally to the scantlings. The herring are usually strung and dried in the morning and hung in the smokehouse in late afternoon. The smokehouse is not completely filled at one time. Herring suitable for smoking are often obtainable only in comparatively small quantities; and even if large amounts are available, the smokehouse is filled by degrees, in order to make sure that the fish are well dried and that they will be uniformly colored and smoked. If the smokehouse were completely filled with fish at one time, the air would become so saturated with moisture that the rate of drying and smoking would be delayed to such an extent that the fish might spoil there.

At least two men are required to hang the herring in the smokehouse. One man stands in the bay with his feet on the beams, while the other stands on the ground and hands two sticks of herring at a time up to the first man, keeping the sharp ends of the sticks downward so the herring will not slip off. The lower rows of the bays are usually filled first, and the sticks are spaced far enough apart so that the herring do not touch each other. When the day's lot of herring has been hung in the smokehouse, the fires are lighted, and the fish are given a preliminary smoke of 12 to 15 hours or until the herring are colored by the smoke. At the end

of this time the fires are allowed to die down, and the partly cured herring are transferred to a place nearer to the roof of the smokehouse. Another lot of fish is then hung in the lower part of the smokehouse, and the preliminary smoking is repeated. The process is continued until the smokehouse is completely filled. For a larger smokehouse, this may require two weeks, while a small house may be filled in a few days. A smoldering fire is then kept up for three weeks until the fish are completely cured.

The fires for smoking the herring are built on the ground in the smokehouse and are usually spaced at equal intervals over the entire area, although in some of the smaller houses a low, continuous fire is built following the lines of the back and two side walls. Almost any kind of wood except pine may be used as fuel, but white birch is generally preferred. Driftwood which has been soaked with salt water may also be used. The principal requirement is to have wood that will burn slowly and give off a good deal of smoke. The fires are kept burning continually night and day, and very slowly. The temperature should preferably be less than 70° F. If the smokehouse becomes too hot, the fish may soften and spoil. The customary test to determine the degree of heat is to stretch out an arm between the rows of herring. If the air feels distinctly warm on the hand, the smokehouse is too hot.

After being smoked, the herring are allowed to hang in the smokehouse until they are to be boned or otherwise prepared for shipping. If it is not possible to begin packing in a short time after the smoking process is finished, the smokehouse doors are kept open during the day, and if the weather is damp, low, clear fires are kept going in the smokehouse to prevent the fish from absorbing moisture.

The herring are taken from the smokehouse to the packing shed, where they are packed and graded according to size and quality. Grading is described by Tressler as follows: "The principal grades of hard herring are 'medium-scaled', 'lengthwise', and 'No. 1'. The best grade is 'medium-scaled', which is divided into two sizes known as large and small-medium. Medium-scaled herring are packed crosswise in wooden boxes. A box of the large medium-scaled herring contains from 30 to 40 fish, and the boxes of the medium size average 45 to the box. The 'lengthwise' herring are larger than the medium-scaled, and receive their name from being packed lengthwise of the box, which contains from 15 to 18 smoked fish. The 'No. 1' herring are the smallest and least valuable of those regularly packed; each box contains from 60 to 75 fish. Other grades of smoked hard herring less generally recognized are 'tuck-tails' and 'magdalens'."

If boneless smoked herring are to be prepared, the smoked herring are dumped on wooden tables; and the heads, bellies, and tails are clipped off with scissors. The trimmed fish are then taken to other tables where they are weighed. Women and girls then remove the skin and bones, using their fingers and a knife. The more expert workers can skin and bone 100 to 150 pounds of herring daily. The skinned, boned herring are cut into small strips which are usually packed in light, wooden boxes lined with paper and holding from 5 to 10 pounds. Some of the boneless smoked herring is packed in vacuum-sealed, glass tumblers holding 5 to 8 ounces and in tin cans to about the same weight. The filled containers are not heat sterilized. Preservation depends entirely on salting, drying and smoking. Boneless smoked herring is also packed in small cellophane or "glassine" envelopes holding one or two ounces.

RED HERRING

Great Britain and the Netherlands were formerly the leading curers of "red" herring. Owing to changes in food habits and the development of better methods of food handling, the demand for the hard smoked or "red" herring has decreased; but it is still prepared in quantity, especially for export. The method of curing red herring followed in England and Scotland is briefly as follows:

Fresh herring are "roused" (mixed) well with salt, then packed flat into barrels with plenty of salt, about 30 pounds of salt to 100 pounds of fish. The herring are not gutted. The barrels are allowed to stand on end for two or three days, after which, they should be filled up, headed, and laid on their sides. Brine should be poured into the barrels through the bunghole until the containers will hold no more. The herring are usually left to cure here for at least 10 days, though some curers may leave them in salt as much as six weeks. On the other hand, some curers start the smoking after the herring have been only three days in salt. Duthie says that curing may be done in the tanks used for salting bloaters. If this is done, the herring should be well roused on the floor with salt and turned over during rousing with a wooden shovel. When herring and salt are thoroughly mixed, they are shovelled into the tank, with more salt thrown among the herring as they are filled in, and strong brine added on the top until the herring float. Curing in barrels is believed to be the more satisfactory method.

When the fish are considered to be sufficiently cured, they are strung on smokesticks as described in curing "hard" herring. Each stick is about 56 inches long and holds an average of 25 fish. The sticks of herring are spread across long, narrow tanks of water, about four feet wide, so that the fish hang in the water. The herring are allowed to "steep" in these tanks for some 36 hours, the water being changed once or twice during the steeping period. The object is to soak out the surplus salt.

After the herring have been freshened up sufficiently, they are taken out to drain and dry. This is done on racks in the open air, if the weather is favorable. If the weather is damp or rainy, the herring are hung in the smokehouse at once, but are allowed to drain or "drip" from 12 to 24 hours before the fires are started. The same smokehouses used for kippered herring are generally used for smoking red herring today. When the herring have drained and dried sufficiently, a low fire of billet-wood (small chunks) is started and allowed to burn overnight or for about 12 hours. The fire is then allowed to die down, and the fish are left to cool for 24 hours. A low fire of billet-wood is again lighted and kept up for 24 hours. The fire is then allowed to die out for 24 hours. When it is lighted for the third time, the fire is largely of chips and sawdust to obtain as much smoke as possible. The fish are smoked on alternate days over a period of 3 to 6 weeks (depending on whether the herring are intended for domestic or export trade) before they are considered cured. The temperature of the smokehouse fluctuates between 14° C. (57.2° F) and 19° C. (66.2° F) averaging about 65° F.

Red herring are packed in small boxes, and kegs, or half barrels. The red-herring barrel is a wooden-hooped, dry ware cask like those used for grapes imported from Spain in prewar years. The heavily smoked fish (5 to 6 weeks) are known as "ham-cured reds", and "black herring". Fallen fish or headless herring are spiked on the nailed sticks used for kippered herring and smoked with the others. They go into the trade under the name of "red tenters" and "pucks".

Red herring are graded as follows:

Best selected reds, in kegs (80 to 100 fish)
Best selected reds, in boxes (40 fish)
Second quality reds in boxes
Second quality reds in half barrels (180 to 200 fish)
Red tenters and plucks, in half barrels.

BLOATERS OR BLOATER HERRING

Most of the bloaters cured in the United States are prepared from large, salt herring. Round or ungibbed herring are preferred, although gibbed fish are used when herring is scarce. The salted fish are soaked in large, square tanks of fresh water from 15 to 24 hours, the time depending on the saltiness of the herring. If bloaters are made from fresh herring, the fish are held in a 90 to 95° salinometer brine for an average of 48 hours, then rinsed and hung on sticks. The salt herring, after soaking, are dipped out onto a stringing table and strung on smokesticks as in the curing of hard or red herring, but with fewer fish hung on a stick, generally 15. In some places the herring are soaked for an hour or two, hung on smoke sticks, and then given a second soaking for 15 or 16 hours.

The herring are drained for a few minutes after soaking, then hung in the smokehouse, and the smoking process is begun, with ventilators and drafts of the smokehouse left open. Stevenson says, "In order to 'bloat', the herring must be thoroughly moist, and after they have commenced to dry in the smokehouse the heat must be increased. If they are permitted to hang 10 or 12 hours without heating they will not bloat, but will become hard herring. The smoking is continued from 2½ to 6 days, when the fish are usually sufficiently cured." On the Pacific coast the herring are smoked and dried over a low fire of alderwood at a temperature of 65 to 70° F for 48 hours. At the end of that time a smudge is built up, burning low heaps of sawdust to obtain as dense a smoke as possible with little heat. The temperature of the smokehouse should be about 60° F. This smudge is kept up for from two to five days, according to the weather. In damp or unfavorable weather, about seven days is required to cure the fish from the time they are placed in the smokehouse. Bloaters are packed in light wooden boxes holding 100 fish, the net weight averaging 25 to 35 pounds. Smaller boxes with a net weight of 10 pounds are also marketed.

BLOATERS - ENGLISH METHOD

The method of cure followed in the British Isles differs to some extent from that used in the United States. According to Duthie "the bloater trade is more an English than a Scotch industry". The herring are brought in fresh from the "drifters" (gill netters). Trawl-caught herring are used only if other herring are not available, as herring taken by otter trawl tend to be more or less bruised and damaged. Wash off the herring, then dry salt them in Spanish salt, using enough salt to cover the fish and mixing both salt and herring well together. About 25 pounds of salt are used to 100 pounds of herring. Salting is considered a very important step for herring that are too heavily salted will not have the flavor demanded by the trade. Duthie says that the herring are left in the salt "over-night" (12 to 14 hours). English curers have informed the writer that if the herring are to be packed as bloaters they should not be salted more than 6 hours for a first-class product. Some smokers have large tanks in their plant to store

herring in brine. Herring are salted in the tanks to be held until the season is over, when they are withdrawn as needed and freshened in water 12 to 16 hours before being hung on smoke sticks.

The herring are rinsed of salt and hung on wooden smoke sticks as for hard or red herring. From 12 to 16 herring are hung on a stick. The fish should be well spaced, not touching each other. The sticks are hung in the smokehouse, and the herring allowed to drain and dry overnight or up to 24 hours, the time depending on the rush of business. A fire is then built up in a thin, even layer over the entire floor of the fire pit. The fire is made of hardwood chips and sawdust (beech, birch, etc., though one or two firms prefer oak). Duthie states that bloaters are smoked in much the same way as kippers and that "a fire of hard wood billets is usually preferred to chips and sawdust. The soft fuel gives more color than is desirable, as bloaters should be dried rather than colored in the smoke." From 8 to 12 hours of light smoking at a temperature of about 80° F. will generally cure the herring sufficiently for the British market. The product is allowed to cool and is then packed in boxes, usually of one stone (14 pounds) each.

KIPPERED HERRING

Kippered herring is the most important, cured fishery product in Great Britain, where the largest share of the herring catch is made into kippers. It is not as popular in the United States. This may be ascribed, in part at least, to the fact that in the United States herring of small size and poor quality have been kippered in an effort to dispose of otherwise unmarketable fish. The demand for kippered herring is slowly increasing in the United States; and a well prepared product, properly merchandised, should eventually find a very considerable market.

The best kippered herring is supposed to come from Scotland and the Isle of Man, but considerable quantities of "kippers" are cured in many of the fish ports throughout Great Britain. A well prepared, kippered herring makes a very tasty breakfast dish. Almost every firm differs as to one or two details of the curing process for kippered herring, but in general the process is as follows: Fresh herring only are used for kippering. The fish should be of fair size and in good condition. Some degree of fat content is desirable.

After being washed to remove slime, blood, scales, and other debris, the herring are split down the left side of the backbone from the tip of the head almost to the tail and are then opened to lie flat in one piece. Gills, viscera, blood, and membranes are cleared away, and the fish washed well in fresh water. After draining for a few minutes, the herring are brined in a 90 to 95° salinometer salt solution. The time required for brining averages from 20 to 30 minutes. The principal factors deciding the length of the brining period are the amount of fish in a batch, the condition of the fish since soft herring require more brining than firm fish, the market where the product will be sold as some markets like a saltier product more than others, and the expectation as to whether the kipper is intended for a longer or shorter period of preservation.

The herring may be dyed at this point, or the dye may have been previously added to the solution in which the fish were brined. If added to the brine, the amount of dye is regulated by the length of the brining period. If not, the herring are dipped for about 30 seconds in a dye solution with a strength (at a guess) of about 1 to 2,000, that is, one gram of dye to 2,000 ml. of water. The dye used is

either annatto or some similar compound. Curers state that good dyeing can be learned only by practice, and like brining, varies according to the weather, condition of fish, and amount handled in a batch. Fish curers are almost unanimous in the belief that the better quality kippers should not be dyed but occasionally some are dyed to meet the demands of special trade. This practice is much more general with kippered herring of lower grade.

After draining a few minutes, the herring are hung on smoke sticks. The sticks are wooden bars four feet long by one and one-half inch by one inch. There are 16 nails driven in on each side, the points projecting upward at a slight angle, so that a stick will hold 8 herring on a side. The nails are in pairs $3\frac{1}{4}$ or $3\frac{1}{2}$ inches apart, according to the probable size of the herring, and about $1\frac{1}{2}$ inches between each pair of nails. The fish are hung by piercing the head through a pair of these nail points so that the herring are open flat with no two fish touching. The sticks of herring are hung in the smokehouse to drain and dry until evening. The lowest row is hung about 12 feet above the firepit floor. A low fire of chips and sawdust is built covering the entire floor. Some curers use almost any hardwood chips or sawdust while others use only oak, claiming that other woods do not give the smoke flavor essential to good-quality kippered herring. The fish are smoked lightly for six to eight hours. One or two refuelings of the fires are usually needed, the second and third fires being lower than the first, with less heat and more smoke. Some heat is necessary at first if the herring are to take color properly, although the fish must not be overheated, or they will be scalded and fall from the hangers.

The kippered herring are allowed to cool and dry for several hours. If this is not done the herring are apt to sweat and arrive in bad condition. After cooling, the herring are sorted and packed in boxes of several sizes, the most popular holding a stone (14 pounds) of fish. A growing export trade is being done with the United States and with some of the British colonies. Kippered herring intended for the export trade or the best class of local trade are wrapped in pairs in cellophane envelopes before being packed in boxes.

A development in the curing of kippered herring, that has resulted in an improved product, was introduced some years before the outbreak of the Second World War by a firm of fish curers in Fleetwood, England. This is the boneless kipper. The herring are dressed mechanically. They are beheaded, the thin part of the belly is cut off, and the blood, viscera and backbone are removed by a machine handling around 2,000 fish per hour. There is no difference in the brining and smoking procedure. During the smoking the boned kippers must be handled more carefully than fish dressed in the ordinary manner, but the product is of high quality and is practically free from bones and waste. In a number of other packing centers, boneless kippered herring is being prepared by hand. The writer has put up several experimental hand-dressed packs and finds little difficulty in using this method. Loss in dressing is slightly greater, but the improvement in product more than balances any loss in weight. The herring may be dressed almost as quickly by hand as by machine.

The method for kippering herring in the United States differs but slightly from that used in Great Britain. The greater shipping distances and the rather uncertain demand in the United States make necessary a somewhat more durable product which is obtained by giving the fish a heavier brining and a longer smoke (from 12 to 16 hours). The product is packed in 10-pound wooden boxes and is usually stored at temperatures of 33 to 35° F, as even these kippered herring will not keep long at ordinary temperatures. Experimental freezing of kippered herring has not been

particularly successful. Studies at the University of Washington College of Fisheries indicated that the best results were secured by freezing fresh fish to be thawed and kippered as required.

BUCKLING

Some herring is smoked as buckling in the United States, principally in New York, but the amount is not large. Buckling is a very appetizing, smoked fish product and deserves a much wider market. It is believed to be of Netherlands origin, but has acquired popularity in Germany and is one of the principal smoked fishery products of that country. In the preparation of buckling, fresh herring that are fat and of medium size are preferred. The fish are rinsed in fresh water to remove blood, slime, scales, and any other debris. After draining, the herring are left in a 70 to 80° salinometer brine from two to three hours, the length of time depending on the strength of the brine and the size of the herring. In some districts the fish are not cured in brine but are mixed with dry salt and left in a heap for a couple of hours or until sufficient salt has penetrated the herring.

The herring are rinsed in fresh water, then strung on iron or wooden smoke sticks or spits. The method followed in stringing is that used in stringing hard smoked herring or bloaters. Each stick is about a meter (3.3 feet) in length and holds from 15 to 25 herring, the number varying according to the size. Care must be taken to space the fish so that no two touch. The sticks or spits are laid on wooden frames holding from 15 to 25 spits. These frames are slid into movable or stationary racks, where the fish are left to drain. In some cases, when the weather is favorable, the herring are given a sun-drying in addition. This increases the capacity of the smokehouse, as a greater quantity of fish can then be cured during the working day.

When the fish are properly drained, the frames are placed in the smokehouse. A fire is built up to burn with a bright, clear flame without much smoke. Sticks of alder, beech, or oak are the fuel used. After an hour to an hour and a half, the herring are considered dry. The fire is covered with alder chips to produce heavy smoke and to give the fish the golden yellow color required. If the chips do not give off sufficient smoke, they may be dampened occasionally by a sprinkle of water; this is also done if the fire burns up too strongly. The regulating damper at the top of the chamber is first closed half way, and later all the way. It takes approximately an hour to an hour and a half to complete the cure. The whole process takes about 3 hours. The quality of the product is said to depend largely on the size and quality of the herring and the care with which the fires are regulated. The buckling are marketed in boxes of 5 to 14 pounds in weight. Herring that are split down the back like kippered herring and then given the buckling cure are known as "Fleckheringe".

MODIFIED BUCKLING CURE

The writer has found that the following process, a modification of the buckling cure, will produce an appetizing article suitable for distribution in the United States. Fresh or frozen herring may be used. Frozen herring should be thawed over night. Cover the herring with three-quarter ground salt, using about one part of salt to four of fish, and allow them to cure from two to three hours, then rinse off in fresh water. After draining, the fish are given a drying of from two to two

and a half hours in an artificial drier at a temperature of 60° F preferably, and not more than 70° F. All surface moisture should be removed by this time. After being strung on rods, the herring are given a cool smoke at a temperature not higher than 70° F for six hours. The fire is then built up and the fish are partly cooked for 45 to 60 minutes at a temperature of 180° F.

Chill storage temperatures between 33° and 36° F. must be used if the product is to be kept in good condition for periods longer than a few days. It must be handled even more carefully than kippered herring.

SPRATS

Smoked sprat (Clupea sprattus) is a favorite product in all the countries of the Baltic area, but especially in Germany. Some smoked sprats or "Keiller Sprotten" were imported into the United States from Germany before the Second World War. A smoked sprat substitute prepared from herring (Clupea harengus) is now cured in the United States. The German process is briefly as follows:

Fresh sprats are graded for size so that each lot is uniform. They are then brined for one hour in a salt brine testing 80° salinometer. After being rinsed thoroughly, the sprats are piled in baskets to drain off the surplus moisture. The fish are then hung on iron spits, much as in sardine canning; that is, a thin iron rod is run through the eyes of the fish. However, the fish must not be hung too closely on the rods. When a rod is filled, it is placed in a wooden or iron frame. The frames are stacked to a depth of four or five frames in the standard-type, hot-smoking oven used for buckling. The smoking process is almost the same as for buckling. That is, the fish are first cured over a bright, clear fire for about one hour. The fire is then covered with alder chips and the damper closed, building up heat and a dense smoke. The cure is completed in about an hour, so that the entire smoking process takes two hours or a little more.

The smoking of sprats in the United States is confined to New York City, the only commercial market for this product. However, even there the demand is irregular. Some sprats have been smoked in Nova Scotia and sent to New York. The American sprats are cured from small spring herring, 5 to 7 inches in length. Some frozen herring shipped in from Newfoundland are used. The herring are first washed thoroughly, allowed to drain for a few minutes, and then brined for 45 minutes in a 90° salinometer brine. After being rinsed, the fish are drained thoroughly, and spread thinly on wooden-frame trays with bottoms of wire mesh. The herring should not be allowed to touch each other. The trays are placed in a finnan haddie smoke house at a distance of 18 inches to two feet above the fire, where the fish are smoked from 16 to 20 hours. At the end of this time they should have a golden brown color and are sufficiently cooked so that they are ready to eat. These sprats remain in good condition for a few days only.